

**MEHU 6333-U.S. Medical Technologies in Historical Perspective**  
**Thursdays, 10:00 a.m. - 1:00 p.m., IMH Library, 2.204 Ashbel Smith Building (Old Red)**

**Instructor Information:**

**Course Instructor:** Dr. Dayle DeLancey, Ph.D.

**Instructor E-Mail Address:** dbdelanc-AT-utmb-DOT-edu

**Office:** Suite 2.208 Ashbel Smith

**Office Telephone:** XXX-XXX-XXXX

**Office Hours:** Thursdays after class, from 1:00 – 3:00 p.m. **-OR-** By appointment (E-mail Dr. DeLancey to arrange an appointment.)

**Course Description:**

From new imaging devices to anti-retrovirals, medical technologies – and the controversies that they often generate – embody the most novel and cutting-edge aspects of contemporary society. And yet, analysis of the long sweep of U.S. history reveals that neither the emergence of high-profile medical technologies nor the dilemmas that often accompany their arrival are ‘modern’ phenomena. Indeed, history also demonstrates that such technologies tend not only to embody the science of their times, but also to reflect the concerns of the periods in which they emerged. From the stethoscope to gene therapy, history provides ample examples of technological developments that have at once transformed society and invited criticism. This course charts the history of such medical technologies in the U.S., from the eighteenth century to the present day, analyzing the nature and import of each in historical and social context.

**Grading Criteria:**

*Each student's course grade will be derived from the following FOUR elements:*

- (1) **Participation in seminar discussions** (20%).
- (2) **Reading-and-Research Journal** (20%).
- (3) **1,500-word Literature Review Essay** (roughly 6 double-spaced, typed pages) (20%).  
     → **Literature Review Essay due in class during WEEK 9.**
- (4) **6,000-word Final Research Paper/Journal Article** (roughly 25 double-spaced, typed pages), that: (a) blends analysis of primary and secondary sources, (b) represents original research, and (c) is suitable for publication in a peer-reviewed, academic journal (40%). **As such, this assignment asks you to approach it as if you are writing a paper for submission to an academic journal. We will discuss this further in class, and will revisit the issue throughout the term so that requirements are clear and so that students are guided through the stages of the assignment.**  
     → **Final Research Paper/Journal Article due in class APRIL 17, 2008.**

*The mechanics of the Reading-and-Research Journal, Literature Review Essay, and Final Research Paper/Journal Article will be covered in class and via e-mail.*

**Required Texts:**

PDF versions of all course readings are housed online in a WebCT portal accessible via the main UTMB website.

**Prerequisite:**

For MEHU students, no prerequisites; for non-MEHU students, the e-mailed permission of the instructor, who can be reached at: dbdelanc-AT-utmb-DOT-edu.

**Enrollment restrictions:** Minimum 1, Maximum 12

**Course Objectives:**

Upon completion of this course, students should know, understand, and be able to use concrete examples to explain the following in appropriate historical and social context:

- The development, emergence, legacies, and antecedents of some landmark medical technologies.
- Medical technology's role within and/or impact upon:
  - the practice of medicine;
  - conduct of medical research;
  - production and revision of medical knowledge – including disease concepts;
  - medical professionals, professions, and institutions.
- Medical technology's impact upon the experience of the patient.
- Medical technology's relationships with industry.
- Medical technology's relationships with commercial markets.
- Significant theoretical and/or historiographic approaches to the study of medical technologies.
- Key controversies in the development and/or use of medical technologies.
- Medical technologies and bioethics, including questions of allocation, justice, and risk.
- Interactions between medical technologies and ethnicity, race, gender, class, and religion.
- The means of assessing the efficacy and value of medical technologies.

**Week 1: THURSDAY, JANUARY 3, 2008**  
**INTRODUCTIONS, HOUSEKEEPING ISSUES, SYLLABUS REVIEW**

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**Week 2: THURSDAY, JANUARY 10, 2008**  
**THEORY AND BACKGROUND**

Robert L. Heilbroner, “Do Machines Make History?,” *Technology and Culture*, 8.2 (1967), 335-345.

Melvin Kranzberg, “Technology and History: ‘Kranzberg’s Laws’,” *Technology and Culture*, 27.3 (1986), 544-560.

R. A. Buchanan, “Theory and Narrative in the History of Technology,” *Technology and Culture*, 32.2 (1991), 365-376.

John Harley Warner, “Science in Medicine,” *Osiris*, 2nd Series, Vol. 1, Historical Writing on American Science. (1985), pp. 37-58.

\*Trevor Pinch and Wiebe E. Bijker, “The Social Construction of Facts and Artifacts: Or how the Sociology of Science and the Sociology of Technology Might Benefit Each Other”, in Wiebe E. Bijker, Thomas Hughes and Trevor Pinch, eds, *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, MA: MIT Press, 1987), 17-50.

\* Many students find this highly-influential article tough going when they sit down to read it. Please: (1) simply read for the main idea of each section and then craft an outline of the article’s argument and (2) feel free to simply\* skim\* the many diagrams and flowcharts in the article!

**Week 3: THURSDAY, JANUARY 17, 2008**  
**THE STETHOSCOPE: The Disappearance of the ‘Sick-Man’? Part One**

Malcolm Nicolson, “The Art of Diagnosis: Medicine and the Five Senses,” in W. F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine, Volume 2* (London and New York: Routledge, 1993), 801-825.

Stanley Joel Reiser, *Medicine and the Reign of Technology* (Cambridge: Cambridge University Press, 1978), as follows:

- “Chapter 1: Examination of the Patient in the Seventeenth and Eighteenth Centuries,” 1-22.
- “Chapter 2: The Stethoscope and the Detection of Pathology by Sound,” 23-44.

Audrey B. Davis, “The Stethoscope,” *Medicine and Its Technology: An Introduction to the History of Medical Instrumentation* (Westport, CT and London: Greenwood Press, 1981), 87-116.

\*Nicholas D. Jewson, “The Disappearance of the Sick-Man from Medical Cosmology, 1770-1870,” *Sociology*, 10.2(1976), 225-244.

\* Because the stethoscope and the microscope are the two central technologies in Jewson’s argument, we will be reading his article in the stethoscope unit, then re-reading it for further discussion in the microscope unit!

**Week 4: THURSDAY, JANUARY 24, 2008**  
**THE MICROSCOPE: The Disappearance of the ‘Sick-Man’? Part Two**

Reiser, “Chapter 4: The Microscope and the Revelation of a Cellular Universe,” *Medicine and the Reign of Technology*, 69-90.

James H. Cassedy, “The Microscope in American Medical Science, 1840-1860,” *Isis*, 67.1(1976), 76-97.

Deborah Jean Warner, “The Campaign for Medical Microscopy,” *Bulletin of the History of Medicine*, 69(1995): 367-386.

C. Heitzman, “The Aid which Medical Diagnosis Receives from Recent Discoveries in Microscopy,” *Archives of Medicine (New York)*, 1(1879): 44-67. Reprinted in: Howell, ed., *Technology and American Medical Practice* (New York and London: Garland, 1988, 33-40.

\*Nicholas D. Jewson, “The Disappearance of the Sick-Man from Medical Cosmology, 1770-1870,” *Sociology*, 10.2(1976), 225-244.

**\* Because the stethoscope and the microscope are the two central technologies in Jewson’s argument, we will be reading his article in the stethoscope unit, then re-reading it for further discussion in the microscope unit!**

**Week 5: THURSDAY, JANUARY 31, 2008**  
**THE SPIROMETER & THE SPHYGMOMANOMETER: Measuring Physiology**

Reiser, “Chapter 5: The Translation of Physiological Actions into the Languages of Machines,” *Medicine and the Reign of Technology*, 91-121.

Alexander Rattray, “The Spirometer in Diagnosis,” *Pacific Medical and Surgical Journal*, 22(1879-1880), 110-117. Reprinted in: Howell, ed., *Technology and American Medical Practice* (New York and London: Garland, 1988, 33-40.

Davis, “Concepts of the Pulse and Instruments,” *Medicine and Its Technology* (Westport, CT and London: Greenwood Press, 1981), 87-116.

Lundy Braun, “Spirometry, Measurement, and Race in the Nineteenth Century,” *Journal of the History of Medicine and Allied Sciences*, 60.2(2005), 135-169.

Hughes Evans, “Losing Touch: The Controversy over the Introduction of Blood Pressure Instruments into Medicine,” *Technology and Culture*, Special Issue: Biomedical and Behavioral Technology, Vol. 34, No. 4., (1993), 784-807.

**Week 6: THURSDAY, FEBRUARY 7, 2008**

**NO CLASS**

**Week 7: THURSDAY, FEBRUARY 14, 2008**

**X-RAYS AND VISUAL TECHNOLOGIES: The Atomized or Transparent Patient**

Reiser, "Chapter 3: Visual Technology and the Atomization of the Living," *Medicine and the Reign of Technology*, 45-68.

Bettyann Holzmann Kevles, *Naked to the Bone: Medical Imaging in the Twentieth Century* (New York: Basic Books, 1997), as follows:

- "Chapter 1, The Discovery of X-Rays: Seeing Is Believing," 9-32.
- "Chapter 2, Medical Applications: The Living Body beneath the Skin," 33-53.
- "Chapter 3, Technological Innovation 1897-1918: Building a Better Mousetrap," 54-76.
- "Chapter 4, Medical Politics between the Wars: Setting Standards," 77-96.
- "Chapter 5, Technological Innovation 1910-1918: Sharper, Clearer, Deeper," 97-115.

Ellen B. Koch, "In the Image of Science? Negotiating the Development of Diagnostic Ultrasound in the Cultures of Surgery and Radiology," *Technology and Culture*, Special Issue: Biomedical and Behavioral Technology, 34.4 (1993), 858-893.

**Week 8: THURSDAY, FEBRUARY 21, 2008**

**DIAGNOSTIC LABORATORY TECHNOLOGY: Case Studies in Blood**

Reiser, "Chapter 6: Chemical Signposts of Disease and the Birth of a Diagnostic Laboratory," *Medicine and the Reign of Technology*, 122-143.

Ross C. Whitman, "The Technique of Blood Examination," *The Chicago Medical Recorder* 26(1904): 24-37. Reprinted in: Howell, ed., *Technology and American Medical Practice* (New York and London: Garland, 1988, 33-40.

Keith Wailoo, *Drawing Blood: Technology and Disease Identity in Twentieth-Century* (1997; Baltimore: Johns Hopkins University Press, 1999), as follows:

- "Introduction: Putting the Question to Technology," 1-16.
- "Chapter 2, The Rise and Fall of Splenic Anemia: Surgical Identity and Ownership of a Blood Disease," 46-72.
- "Chapter 4, The Corporate 'Conquest' of Pernicious Anemia: Technology, Blood Researchers, and the Consumer," 99-133.
- "Chapter 5, Detecting 'Negro' Blood: Black and White Identities and the Reconstruction of Sickle Cell Anemia," 134-161.
- "Chapter 6, 'The Forces That Are Molding Us': The National Politics of Blood and Disease after World War II," 162-200.

**\*\*\*ALERT! LITERATURE REVIEW ESSAY DUE AT START OF CLASS IN WEEK 9.\*\*\***

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**Week 9: WEDNESDAY, FEBRUARY 27, 2008**

**HOSPITAL TECHNOLOGY: Technology in Hospitals, Hospitals as Technology**

**CLASS MEETS AT FACULTY CLUB AT 9:00 a.m.**

**(Class date, time, & place adjusted to accommodate extended IMH Faculty Meeting 2/28/08.)**

Reiser, "Chapter 7: Medical Specialism and the Centralization of Medical Care," *Medicine and the Reign of Technology*, 144-157.

Lindsay Prior, "The Architecture of the Hospital: A Study of Spatial Organization and Medical Knowledge," *The British Journal of Sociology*, Vol. 39, No. 1. (1988), 86-113.

Jeanne Kisacky, "Restructuring Isolation: Hospital Architecture, Medicine, and Disease Prevention," *Bulletin of the History of Medicine*, 79.1(2005), 1-49.

Joel D. Howell, and *Technology and the Hospital: Transforming Patient Care in the Early Twentieth Century* (Baltimore: Johns Hopkins University Press, 1996), as follows:

- "Physicians, Patients, and Medical Technology," 1-29.
- "Science, Scientific Systems, and Surgery: Technology and the U.S. Hospital," 30-67.
- "Machines and Medicine: Lessons from the Early Twentieth Century," 227-249.

**Week 10: TUESDAY, MARCH 4, 2008**

**PHARMACEUTICALS: Technological Products of Science, Medicine, and Industry**

**CLASS MEETS AT FACULTY CLUB AT 9:00 a.m.**

**(Class date, time, & place adjusted to accommodate IMH Graduate Student Research Colloquium 3/06/08.)**

Charles E. Rosenberg, "The Therapeutic Revolution: Medicine, Meaning, and Social Change in America," in Morris J. Vogel and Charles E. Rosenberg, eds., *The Therapeutic Revolution: Essays in the Social History of American Medicine* (Philadelphia: University of Pennsylvania Press, 1979), 3-25. Reprinted in Judith Walzer Leavitt and Ronald L. Numbers, eds., *Sickness and Health in America: Readings in the History of Medicine and Public Health*, Second Edition (Madison, WI: University of Wisconsin Press, 1985), 39-52.

Nancy Tomes, "The Great American Medicine Show Revisited," *Bulletin of the History of Medicine*, 79.2(2005): 627-663.

Nicolas Rasmussen, "The Drug Industry and Clinical Research in Interwar America: Three Types of Physician Collaborator," *Bulletin of the History of Medicine*, 79.1(2005), 50-80.

Chris Feudtner, "The Want of Control: Ideas, Innovations, and Ideals in the Modern Management of Diabetes Mellitus," *Bulletin of the History of Medicine*, 69.1(2005), 66-90.

Jeremy A. Greene, "Releasing the Flood Waters: Diuril and the Reshaping of Hypertension," *Bulletin of the History of Medicine*, 79.4(2005), 749-795.

**Week 11: THURSDAY, MARCH 13, 2008**

**GENETIC TECHNOLOGIES: Ethnicity, Race, Commerce, and ‘Science’s Holy Grail’**

Daniel J. Kevles, “Out of Eugenics: The Historical Politics of the Human Genome,” in Daniel J. Kevles and Leroy Hood, eds. *The Code of Codes: Scientific and Social Issues in the Human Genome Project* (Cambridge, MA: Harvard University Press, 1992): 3-36.

Sally Smith Hughes, “Making Dollars Out of DNA: The First Major Patent in Biotechnology and the Commercialization of Molecular Biology, 1974-1980,” *Isis* 92.3(2001): 541-575.

Keith Wailoo and Stephen Pemberton, *The Troubled Dream of Genetic Medicine: Ethnicity and Innovation in Tay-Sachs, Cystic Fibrosis, and Sickle Cell Disease* (Baltimore: Johns Hopkins University Press, 2006), as follows:

- “Introduction: Ethnic Symbols in Conflicted Times,” 1-13.
- “Chapter 1, Eradicating a ‘Jewish Gene’: Promises and Pitfalls in the Fight against Tay-Sachs Disease,” 14-60.
- “Chapter 2, Risky Business in White America: Gene Therapy and Other Ventures in the Treatment of Cystic Fibrosis,” 61-115.
- “Chapter 3, A Perilous Lottery for the Black Family: Sickle Cells, Social Justice, and the New Therapeutic Gamble,” 116-174.

**Week 12: THURSDAY, MARCH 20, 2008**

**REPRODUCTIVE TECHNOLOGIES: Feminist Theory Meets Technological History**

Keith Grint and Steve Woolgar, “On Some Failures of Nerve in Constructivist and Feminist Analyses of Technology,” *Science, Technology, & Human Values*, Special Issue: Feminist and Constructivist Perspectives on New Technology, Vol. 20, No. 3, (1995), 286-310.

Kevles, “Looking through Women: The Development of Ultrasound and Mammography,” *Naked to the Bone*, 228-260.

Ruth Schwartz Cowan, “Genetic Technology and Reproductive Choice: An Ethics for Autonomy,” in Kevles and Hood, eds., *Code of Codes*, 244-263.

Suzanne White Junod and Lara Marks, “Women’s Trials: The Approval of the First Oral Contraceptive Pill in the United States and Great Britain,” *Journal of the History of Medicine and Allied Sciences* 57.2 (2002), 117-160.

Elizabeth Siegel Watkins, “‘Doctor, Are You Trying to Kill Me?’: Ambivalence about the Package Insert for Estrogen,” *Bulletin of the History of Medicine* 76.1(2002), 84-104.

**Week 13: THURSDAY, MARCH 27, 2008**  
**COMPUTER TECHNOLOGY: Beyond Quantification and Automation**

Reiser, "Chapter 10: Telecommunication, Automation, and Medical Practice," *Medicine and the Reign of Technology*, 196-226.

Joel D. Howell, "Technologies Transforming Health Care: X-Rays, Computers, and the Internet," in Lester D. Friedman, ed., *Cultural Sutures: Medicine and Media* (Durham and London: Duke University Press, 2004), 333-350.

Timothy Lenoir, "The Shape of Things to Come: Surgery in the Age of Medialization," in Friedman, ed., *Cultural Sutures*, 351-372.

Faith McClellan, "Medicine.com: The Internet and the Patient-Physician Relationship," in Friedman, ed., *Cultural Sutures*, 373-385.

Tod Chambers, "Virtual Disability: On the Internet, Nobody Knows You're Not a Sick Puppy," in Friedman, ed., *Cultural Sutures*, 386-398.

**Week 14: THURSDAY, APRIL 3, 2008**  
**QUESTIONING MEDICAL TECHNOLOGY, PART I: Evaluation and Efficacy**

Reiser, *Medicine and the Reign of Technology*, as follows:

- "Chapter 8: The Shortcomings of Technology in Medical Decision-Making," 158-173.
- "Chapter 9: Selection and Evaluation of Evidence in Medicine," 174-195.

David S. Jones, "Visions of a Cure: Visualization, Clinical Trials, and Controversies in Cardiac Therapeutics, 1968-1998," *Isis*, Vol. 91, No. 3. (2000), 504-541.

David J. Rothman, "The Iron Lung," *Beginnings Count: The Technological Imperative in American Health Care* (New York: Oxford, 1997), 42-66.

James H. Maxwell, "The Iron Lung: Halfway Technology or Necessary Step?," *The Milbank Quarterly* 64 (1986): 3-29.

Lewis Thomas, "Response to James H. Maxwell's Essay, 'The Iron Lung'," *The Milbank Quarterly* 64 (1986): 30-33.

**Week 15: THURSDAY, APRIL 10, 2008**  
**QUESTIONING MEDICAL TECHNOLOGY, PART II: Rationing, Risk, and Justice**

Rothman, “Rationing the Respirator,” *Beginnings Count*, 112-131.

George J. Annas and Sherman Elias, “Thalidomide and the *Titanic*: Reconstructing the Technology Tragedies of the Twentieth Century,” *American Journal of Public Health*, Vol. 89, No. 1 (1999), 98-101.

Diana Dutton, Thomas A. Preston, and Nancy E. Pfund, *Worse than the Disease: Pitfalls of Medical Progress* (Cambridge: Cambridge University Press, 1988), as follows:

- Thomas Preston, “The Artificial Heart,” 91-126.
- Diana Dutton, “Swine Flu Vaccination,” 127- 173.
- Dutton, “What is possible? Toward Medical Progress in the Public Interest,” 350-381.

Ted Lockhart, “Technological Fixes for Moral Dilemmas,” *Techné: Research in Philosophy and Technology* (e-Journal of the Society for Philosophy and Technology), 1.3-4(1996): 1-13. (Archived: scholar.lib.vt.edu/ejournals/SPT/v1n3n4/pdf/lockhart.pdf; last accessed December 22, 2007.)

**Week 15: EXTRA SESSION: THURSDAY, APRIL 10, 2008**  
**PAPER WORKSHOP: UTMB Library Starbucks**  
**Meet in front of IMH Library for pick-up, 4:30 p.m.**

What issues are you facing as you write your final paper for this course? What approaches to writing and organization have been working for you thus far – and which have not? Which materials from our course are you trying to integrate with your own research? During this session, which will be structured and conducted like a meeting of a peer writing group, students interact with the instructor and the rest of the seminar to discuss and receive feedback on their papers.

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**\*\*\*ALERT!!!!\*\*\***

**FINAL RESEARCH PAPER/JOURNAL ARTICLE DUE AT START OF CLASS**

**-- i.e. WEEK 16 --**

**ON APRIL 17, 2007!!!**

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**Week 16: THURSDAY, APRIL 17, 2008  
REVIEW AND ASSESSMENT**

**\*\*\*ALERT!\*\*\***

***6,000-word Final Research Paper/Journal Article due at the beginning of class  
in Week 16,***

**APRIL 17, 2008!!!**

**\*\*\*ALERT!\*\*\***

**First Portion of Session:** Each student will be asked to offer brief reflections on the process of completing the research papers that they have just submitted.

**Second Portion of Session:** The bulk of the session will consist of a seminar discussion about the following readings, which will allow us to reflect upon the materials read during the foregoing semester. Thus, please prepare the following for class:

**‘REVIEW AND ASSESSMENT’ READING for APRIL 17, 2008 CLASS:**

Harry M. Marks, “Medical Technologies: Social Contexts and Consequences,” in W. F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine, Volume 2* (London and New York: Routledge, 1993), 1592-1618.

Stanley Joel Reiser, “The Science of Diagnosis: Diagnostic Technology,” in W. F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine, Volume 2* (London and New York: Routledge, 1993), 801-825.

Emmanuel G. Mesthene, “On Understanding Change: The Harvard University Program on Technology and Society,” *Technology and Culture*, Vol. 6, No. 2 (1965), 222-235.

Wiebe E. Bijker, “Do Not Despair: There Is Life after Constructivism,” *Science, Technology, & Human Values*, Theme Issue: Technological Choices, Vol. 18, No. 1, (1993), 113-138.